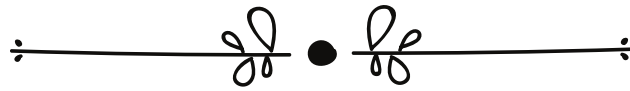
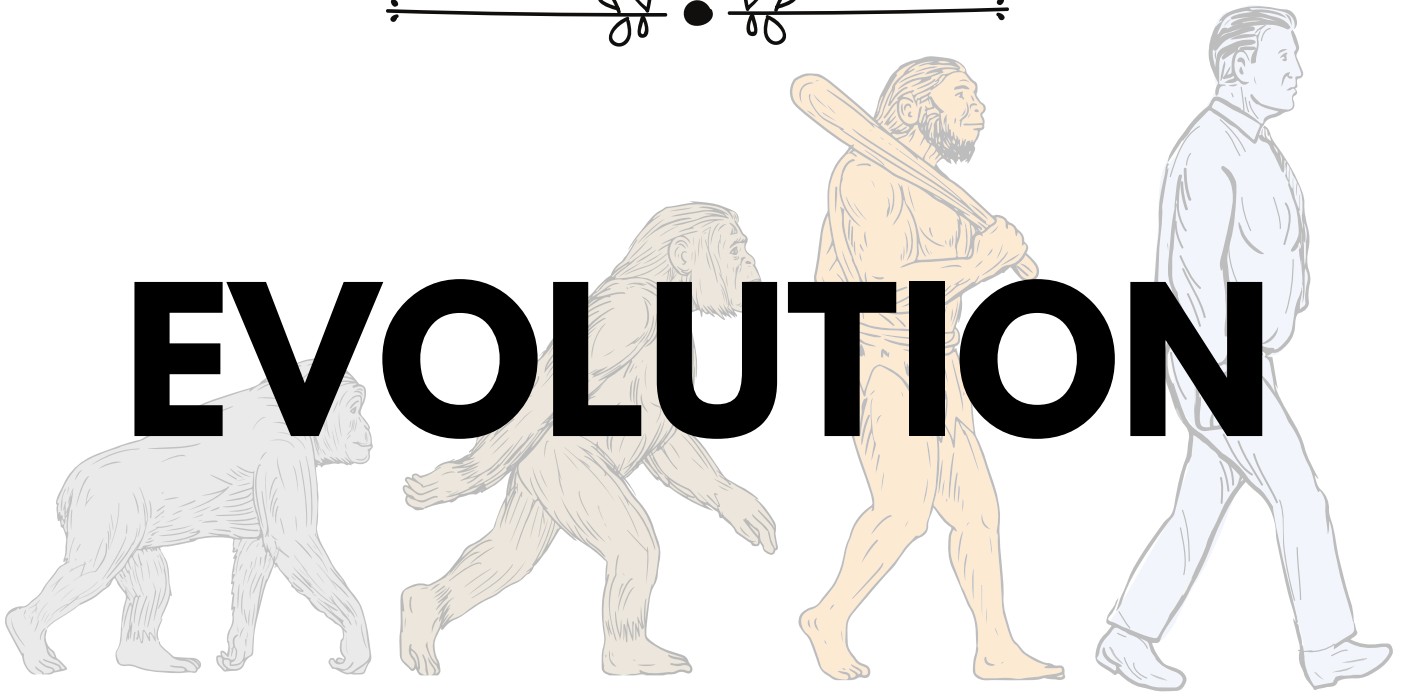


BIOHACK NOTES



EVOLUTION



- BASED ON ACTIVE RECALL AND SPACED REPETITION
- TARGET 360/360 IN NEET BIOLOGY & 100/100 IN BOARDS!



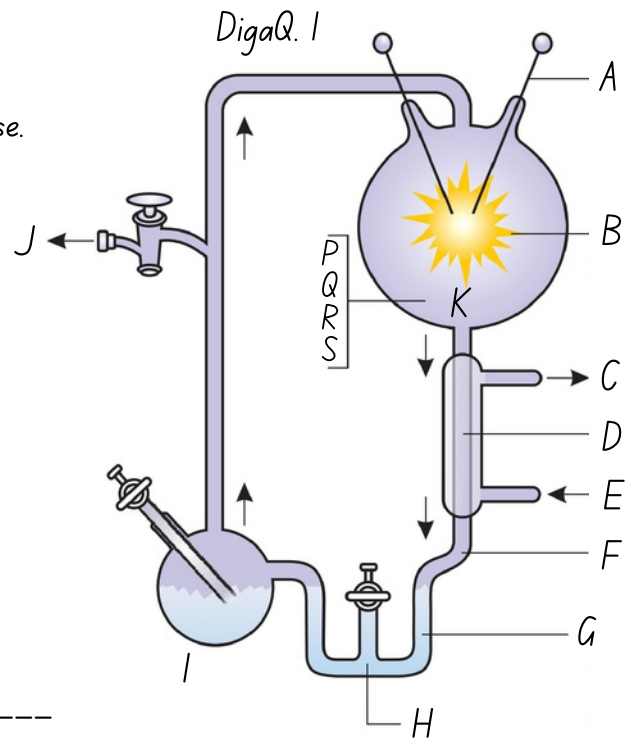
PARTH GOYAL





• ORIGIN OF LIFE

1. The universe is almost _____ billion years old.
2. _____ theory attempts to explain the origin of the universe.
3. The earth was _____ billion years ago.
4. Life appeared _____ billion years ago.
5. Early Latin/Greek thinkers thought units of life called _____. This idea was named _____.
6. No one believes in "Panspermia" today. T/F
7. _____ demonstrated that life comes only from pre-existing life.
8. _____ and _____ proposed that first form of life could have come from non-living organic molecules.
9. Oparin country was _____ and Haldane country was _____.
10. The 4 gases Miller used in his experiment were - (4) (NEET)
11. In year _____, Miller created electric discharge at temp. - (NEET)
12. Earlier conditions on earth were reducing/oxidising and high/low temperature.
13. Miller was an American/English/Russian scientist.
14. Analysis of meteorite revealed similar compounds indicating that similar processes are occurring elsewhere in space. T/F
15. First non-cellular forms of life originated ____ billion years ago.
16. Non-cellular form of life means ?
17. The first cellular form of life did not possibly originate till about _____ billion years ago.
18. According to religious beliefs the earth is about _____ years old.
19. Charles Darwin's ship name was - (NEET)
20. Any population has built in variation in characteristics T/F
21. At which level of grouping does evolution occur ?
22. The fitness according to darwin ultimately and only refers to _____ fitness. (NEET)
23. _____, a naturalist, worked in _____ came to similar conclusions as darwin. (NEET)
24. The geological history of earth closely correlates with the biological history of earth. T/F
25. A study of fossils in different igneous layers indicates the geological period in which they existed. T/F
26. What is paleontological evidence ? (NEET)
27. Embryological support for evolution was proposed by _____ (NEET)
28. This theory was rejected on careful observation by - (NEET)
29. Ernst Baer noted that embryos pass through the adult stage of primitive animals. T/F



30. Ex of divergent evolution - (2) (NEET)

31. Ex of convergent evolution - (4) (NEET)

32. No variant is completely wiped out. T/F

33. Due to absence of lichens, _____-winged moth survived.

34. Dark winged moths were also called _____ moths.

35. Lichens are used as an industrial pollution indicator. T/F

36. Evolution is not a direct process, instead it is a _____ process.

37. Triceratops evolved from Stegosaurus/Brachiosaurus.

38. Brachiosaurus gave rise to _____

39. Darwin went to _____ islands.

40. Darwin finches were black/brown. (NEET)

41. Original varieties of Darwin finches were _____ eating.

42. Evolution of different species in a given geographical area starting from a point and literally radiating to other areas of geography (habitats) is called _____ (NEET)

43. When more than one adaptive radiation appeared to have occurred in an isolated geographical area (representing different habitats), one can call this _____

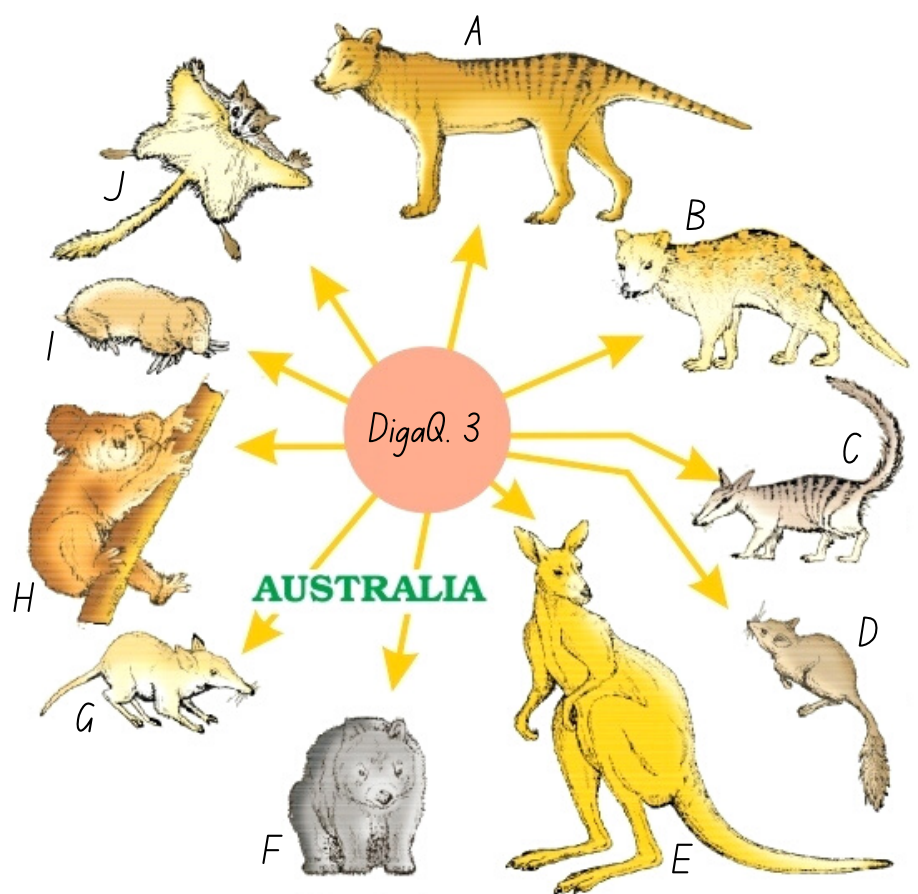
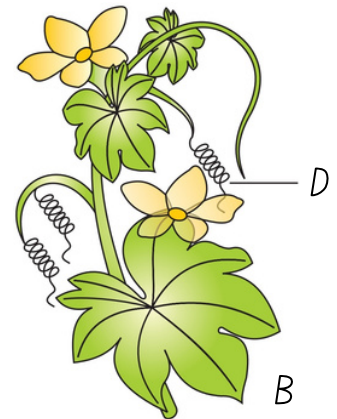
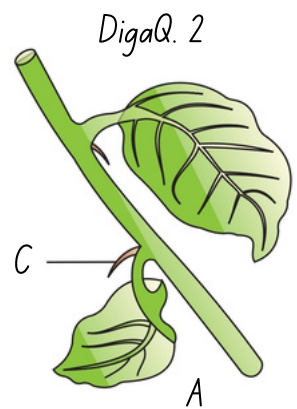
44. Lemur is similar to -

45. Bobcat is similar to -

46. Numbat is similar to -

47. Flying squirrel is similar to -

48. Flying phalanger is a placental mammal/australian marsupial.



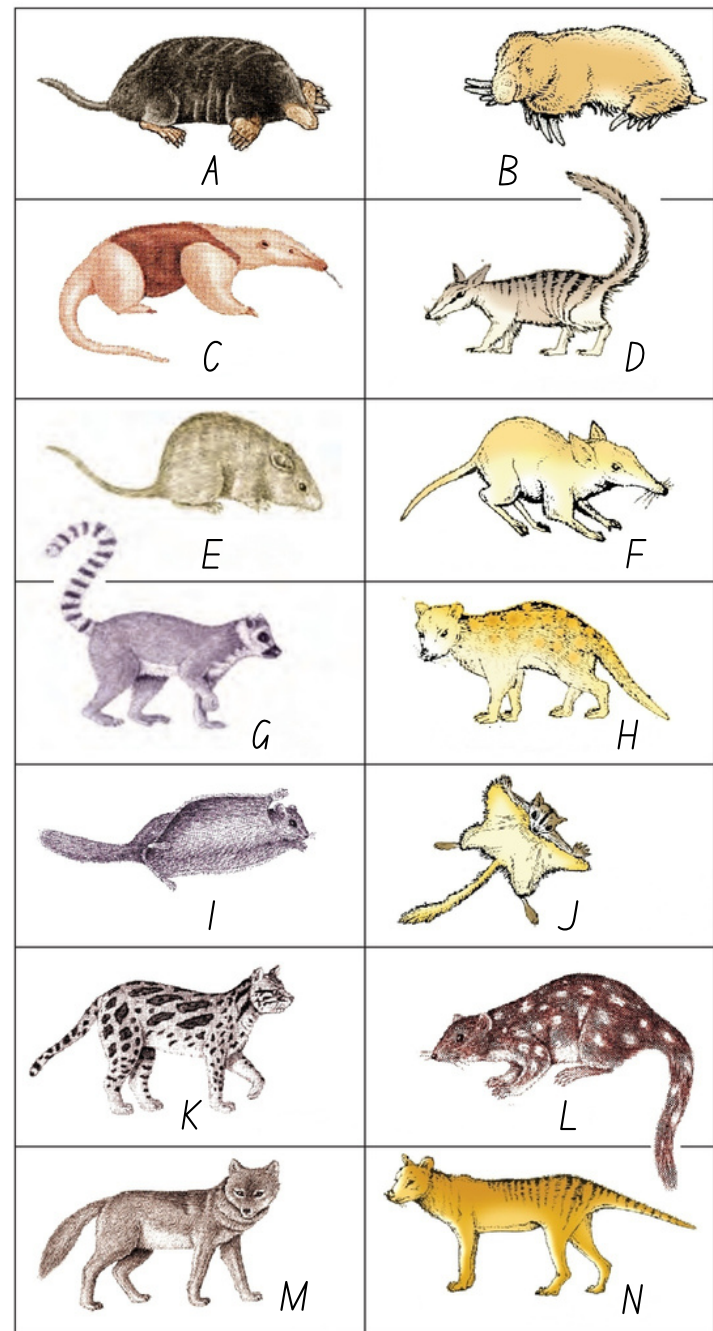
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• BIOLOGICAL EVOLUTION

49. Adaptive ability is not inherited. T/F
50. The 2 key concepts of darwin theory of evolution are
51. Lamarck was a greek/latin/french biologist/physicist/naturalist.
52. When we describe the story of the world we describe evolution as a process/result of a process.
53. Work of _____ on population may have influenced Darwin.
54. _____ work on _____ brought the idea of mutation. (NEET)
55. Darwin variations were small/large and directional/directionless while that of _____ were small/large and directional/directionless. (NEET)
56. Gene migration is also called -
57. If the frequency of heterozygotes in a population is 0.5. What will be the value of p & q ? (NEET)
58. 5 factors that affect Hardy-Weinberg equilibrium are - (NEET)
59. What is genetic drift?
60. Genetic drift operate in small/large isolated population. (NEET)
61. Which 2 effects are seen through genetic drift?
62. What is founder effect?
63. Tell the graphs of stabilisation, directional and disruptive changes. (NEET)

X DigaQ. 4 y



• A BRIEF ACCOUNT OF EVOLUTION

64. First cellular form of life arose _____ mya ago.
65. Around _____ mya, invertebrates were formed and active.
66. Name the 3 categories in which the geological time is divided. Arrange them rank wise from highest to lowest. (NEET)
67. Jawless fishes evolved around _____ mya.
68. Sea weeds and few plants existed probably _____ mya.



PARTH GOYAL

69. Fish with stout and _____ could move on land and go back to water.
70. Fishes invaded land _____ mya.
71. In _____ year, _____ fish caught in country _____ which was thought to be extinct.
72. _____ evolved into first amphibians.
73. Lobefins were ancestors of modern day _____ and _____
74. Giant ferns fell to form _____
75. One important evolutionary advantage of reptiles over amphibians was -
76. Reptile which went back to become fish like reptiles was _____ probably _____ mya.
77. The biggest reptile was _____ with _____ feet height.
78. About _____ mya, the dinosaurs suddenly disappeared from the earth.
79. The first mammals were like _____
80. Due to continental drift, north america fauna was overridden by south america fauna. T/F
81. Ex. of mammals who live in water are - (4)
82. Terms like Triassic, Jurassic are epoch/era/period.
83. Name the 3 recent eras from new to old.
84. Name the different periods of the respective eras from new to old.
85. Mammals evolved from sauropsids/synapsids.
86. Birds evolved from sauropsids/synapsids.
87. The ancestors of mammals of Permian and Jurassic periods are (2) -
88. Thecodonts gave rise to - (3)
89. Sauropsids give rise to modern day _____, _____
90. Thecodont was of _____ period.
91. Chlorophyte ancestors give rise to - (2)
92. _____ diverged from Tracheophyte in Silurian period.
93. _____ and _____ originated from zosterophyllum.
94. _____ are the oldest living vascular land plants.
95. Arborescent lycopods became extinct by the end of _____
96. _____ gave rise to psilophyton.
97. Classes of pteridophyta are -
98. Classes of gymnosperms are -
99. Psilophyton gave rise to - (6)
100. Seed ferns gave rise to - (2)





• ORIGIN & EVOLUTION OF MAN

101. Tell the name of all the stages of human evolution given in NCERT. (7) (NEET)
 102. About ____ mya, Dryopithecus and Ramapithecus were existing. (NEET)
 103. Ramapithecus was more ape-like while Dryopithecus was more man-like. T/F
 104. Fossils of man-like bones have been discovered in _____ and _____
 105. About ____ mya, man-like primates walked in eastern Africa.
 106. They were probably not taller than ____ feet.
 107. ____mya, Australopithecines probably lived in _____ (NEET)
 108. Australopithecus hunted with stone weapons and essentially ate meat. T/F
 109. Human-like beings are called -
 110. First hominid was _____
 111. Fossils discovered in ____ in year ____ revealed the next stage, i.e. -
 112. Homo erectus existed ____ mya. (NEET)
 113. _____ and _____ were hairy and walked like gorillas and chimpanzees.
 114. _____ probably ate meat.
 115. Neanderthal man lived near _____ and _____ between _____-_____ years back. (NEET)
 116. _____ first time used hides to protect their body and buried their dead.
 117. Cranial Capacity of homo habilis, homo erectus, Neanderthal man are - (NEET)
 118. Homo sapiens arose in _____ (NEET)
 119. Ice age occurred between _____-_____ years ago.
 120. Pre-historic cave art developed about _____ years ago.
 121. Agriculture came around _____ years back. (NEET)
-

EVOLUTION



PARTH GOYAL



ANSWERS

• ORIGIN OF LIFE

1. 20
2. Big Bang
3. 4.5
4. 4
5. Greek, spores, Panspermia
6. F, still it is a favorite ideas for some astronomers
7. Louis Pasteur
8. Oparin and Haldane
9. Russia, England
10. CH_4 , H_2 , NH_3 , H_2O
11. 1953, 800°C
12. Reducing, high
13. American
14. T
15. 3
16. Giant molecules like RNA, protein polysaccharide
17. 2
18. 4000
19. H.M.S Beagle
20. T
21. Population
22. Reproductive
23. Alfred wallace, Malay Archipelago
24. T
25. F, sedimentary layers
26. Evidence due to fossils
27. Ernest Heckel
28. Karl Ernst von Baer
29. F
30. Ex of divergent evolution
 - I. Whales, Bats, Cheetah and Human in the pattern of bones of forelimbs
 - II. thorn and tendrils of Bougainvillea and Cucurbita

31. Ex of convergent evolution

- I. Wings of butterfly and of birds
 - II. eye of the octopus and of mammals
 - III. flippers of Penguins and Dolphins
 - IV. Sweet potato (root modification) and potato (stem modification)
32. T
 33. Dark
 34. Melanised
 35. T
 36. Stochastic
 37. Stegosaurus
 38. Tyrannosaurus
 39. Galapagos Islands
 40. Black
 41. Seed-eating
 42. Adaptive radiation
 43. Convergent evolution
 44. Spotted cuscus
 45. Tasmanian tiger cat
 46. Anteater
 47. Flying phalanger
 48. Australian marsupials

• BIOLOGICAL EVOLUTION

49. F
50. Branching descent and natural selection
51. French naturalist
52. Process
53. Thomas malthus
54. Hugo deVries, evening primrose (*Oenothera lamarckiana*)
55. Darwin - Small, directional, deVries - large, directionless



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56. Gene flow

57. By taking $2pq = 0.5$ and applying eq. $p + q = 1$ and $p^2 + 2pq + q^2 = 1$ we get $p = 0.5$, $q = 0.5$

58. gene migration or gene flow, genetic drift, mutation, genetic recombination & natural selection

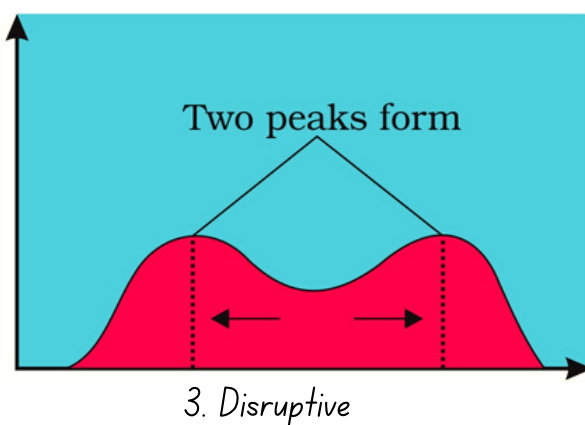
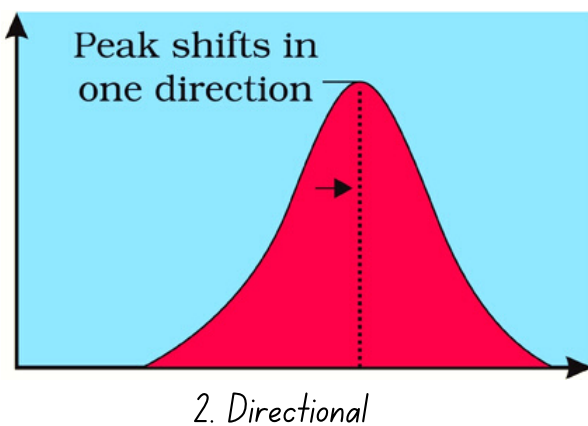
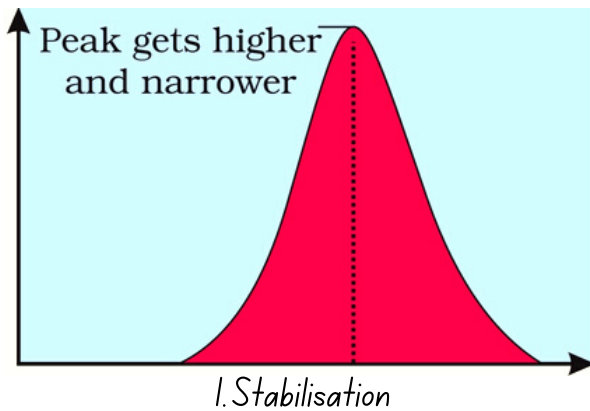
59. variation in the relative frequency of different genotypes in a small population, owing to the chance disappearance of particular genes as individuals die or do not reproduce

60. small

61. Bottle neck effect and Founder Effect

62. It is the loss of genetic variation that occurs when a new population is established by a very small number of individuals from a larger population.

63.



• BRIEF ACCOUNT OF EVOLUTION

64. 2000

65. 500

66. Era - Period - Epoch

67. 350

68. 320

69. Strong fins

70. 350

71. 1938, Coelacanth, South Africa

72. Lobefins

73. frogs and salamanders

74. Coal deposits

75. Reptiles lay thick shelled eggs which do not dry up in sun unlike those of amphibians

76. Ichthyosaurus, 200

77. Tyrannosaurus rex, 20

78. 65

79. Shrews

80. F

81. Whales, dolphins, seals and sea cows

82. Period

83. Cenozoic - Mesozoic - Paleozoic

84. Periods of eras

I. Cenozoic : Quaternary - Tertiary

II. Mesozoic : Cretaceous - Jurassic - Triassic

III. Paleozoic : Permian - Carboniferous - Devonian - Silurian

85. Synapsids

86. Sauropsids

87. Permian - Pelycosaur, Jurassic - Therapsids

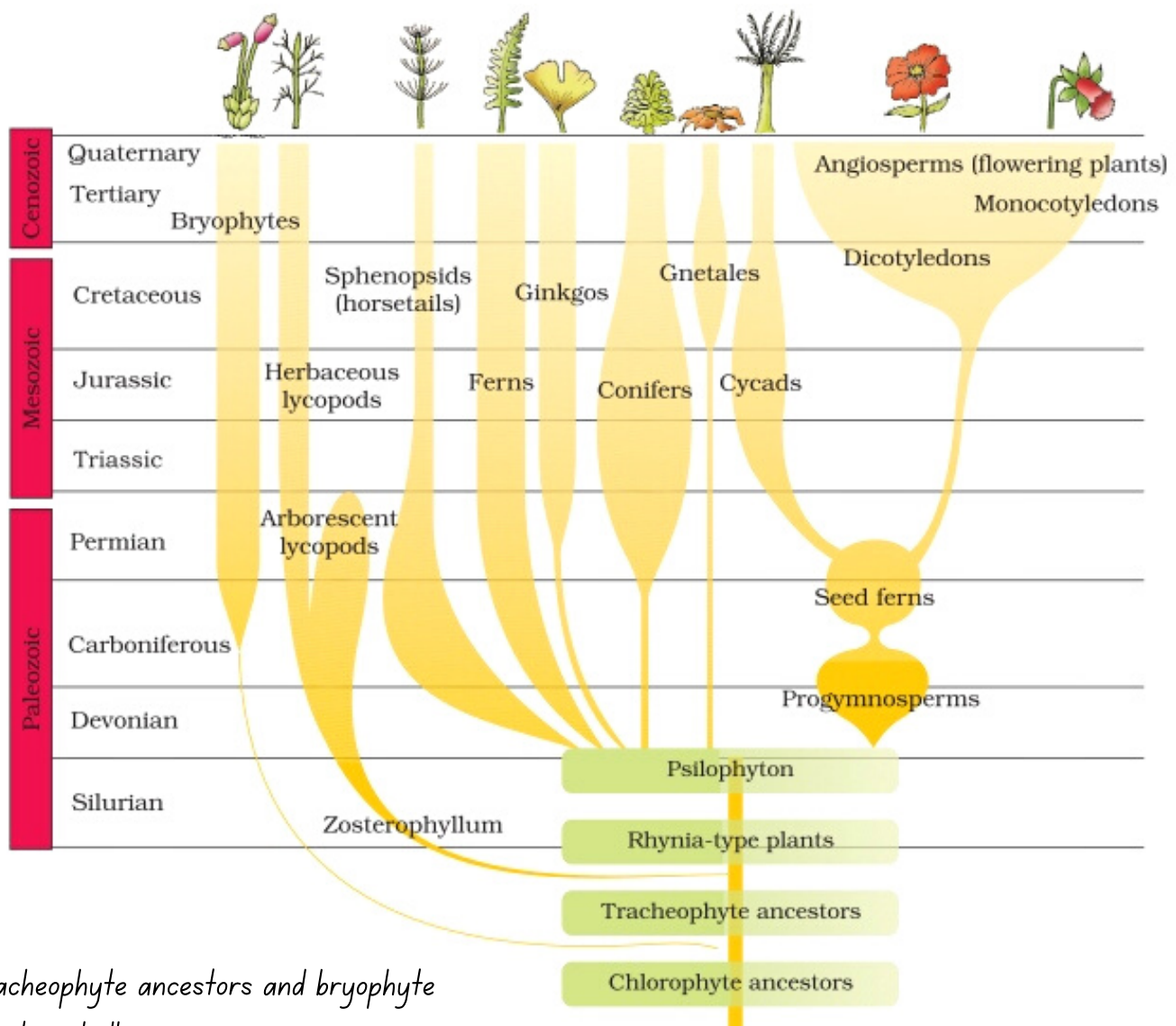
88. Crocodiles, Birds and Dinosaurs

89. Reptiles and birds

90. Permian



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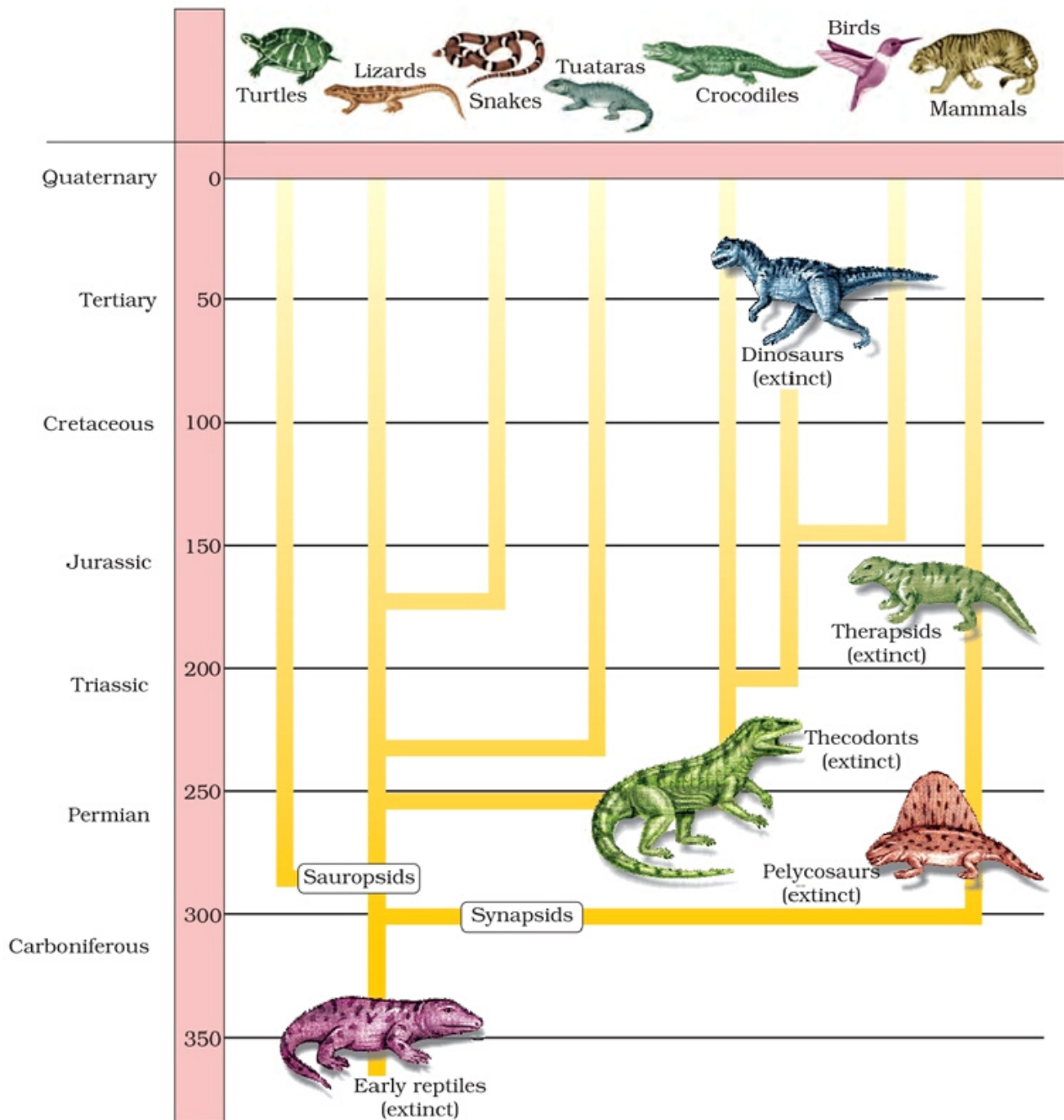


91. Tracheophyte ancestors and bryophyte
92. Zosterophyllum
93. Arborescent and herbaceous lycopods
94. Lycopods
95. Paleozoic era
96. Rhynia-type plant
97. Psilopsida, Lycopsidea, Sphenopsida and Pteropsida
98. Cycadophyta, Ginkgophyta, Gnetophyta, and Coniferophyta
99. Sphenopsida, Pteropsida (fern), Ginkgophyta, Gnetophyta, Coniferophyta, progymnosperms
100. Cycadophyta, Angiosperms
- **ORIGIN & EVOLUTION OF MAN**
101. Dryopithecus → Ramapithecus → Australopithecus → Homo habilis → Homo erectus → Neanderthal man → Homo sapiens
102. 15
103. F

104. Ethiopia and Tanzania
105. 3-4
106. 4
107. 2, Eastern Africa grasslands
108. F, essentially ate fruit
109. Hominids
110. Homo habilis
111. Java, 1891, Homo erectus
112. 1.5
113. Dryopithecus and Ramapithecus
114. Homo erectus
115. East and central asia, 1,00,000-40,000
116. Neanderthal man



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117. Habilis - 650-800cc, Erectus - 900cc,

Neanderthal - 1400cc

118. Africa

119. 75,000-10,000

120. 18,000

121. 10,000

• DigaQs

DigaQ. 1 - Miller's experiment

A - Electrodes P - CH₄

B - Spark discharge Q - NH₃

C - Water out R - H₂O

D - Condenser S - H₂

E - Water in

F - Water droplets

G - Water containing organic compounds

H - Liquid water in trap

I - Boiling water

J - To vacuum pump

K - Gases

DigaQ. 2 - Homologous organs

A - Bougainvillea

C - Thorn

B - Cucurbita

D - Tendril



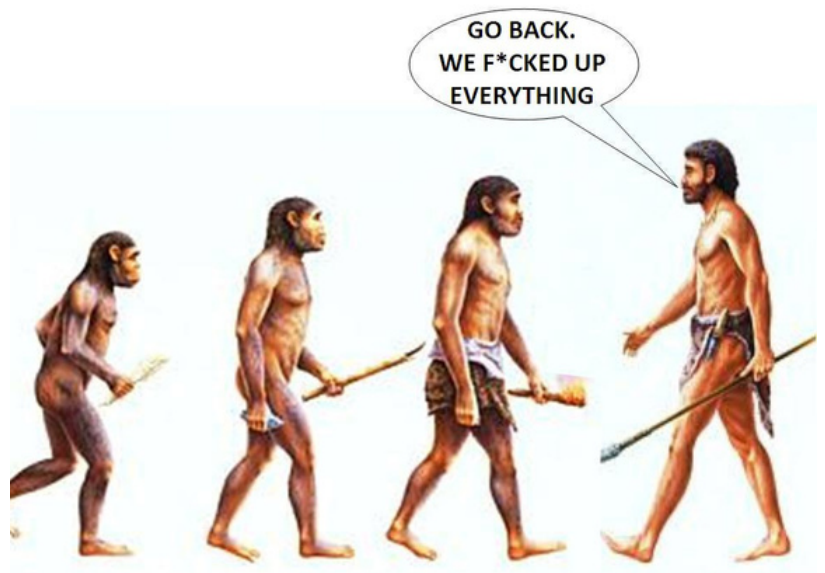
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DigaQ. 3 - Adaptive radiation of marsupials of Australia

A - Tasmanian wolf	F - Wombat
B - Tiger cat	G - Bandicoot
C - Banded anteater	H - Koala
D - Marsupial rat	I - Marsupial mole
E - Kangaroo	J - Sugar glider

DigaQ. 4 - Convergent evolution of Australian Marsupials and placental mammals

X - <u>Placental mammals</u>	Y - <u>Australian marsupials</u>
A - Mole	B - Marsupial mole
C - Anteater	D - Numbat
E - Mouse	F - Marsupial mouse
G - Lemur	H - Spotted cuscus
I - Flying squirrel	J - Flying phalanger
K - Bobcat	L - Tasmanian tiger cat
M - Wolf	N - Tasmanian wolf



SCAN AND DONATE US SO THAT WE
CAN CREATE MORE SUCH QUALITY
CONTENT FOR YOU!



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